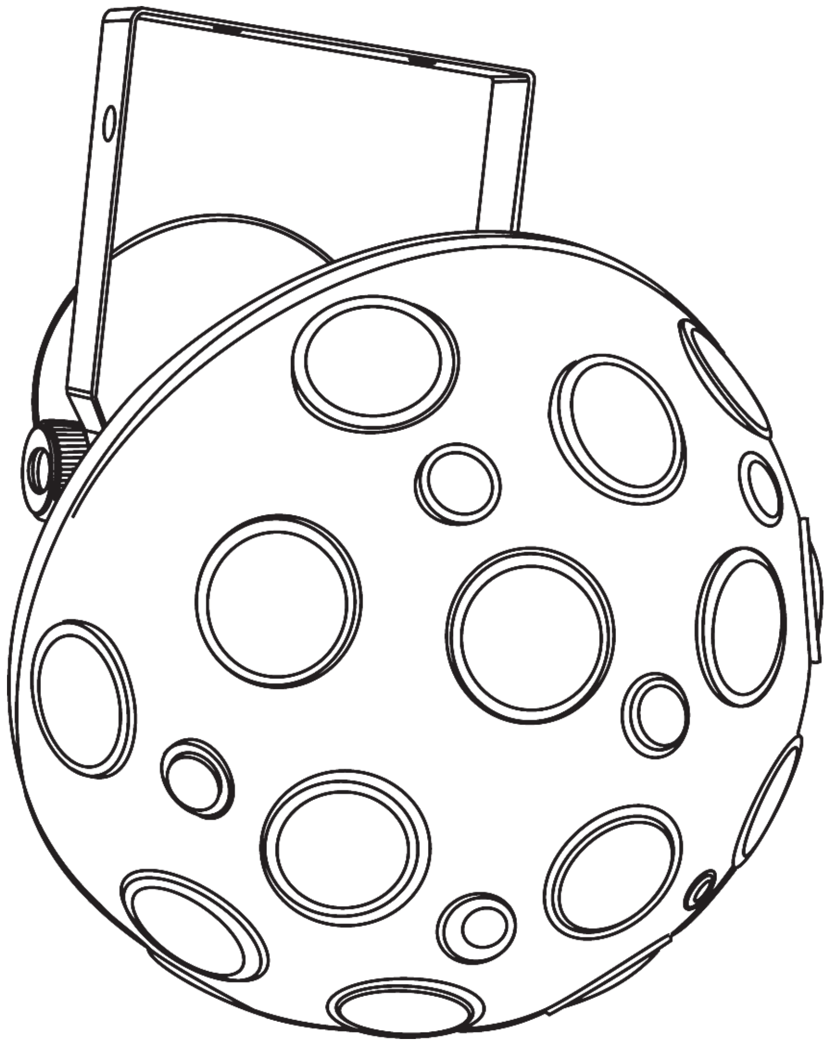
ORB™

User Manual



CHAUVET®

Value · Innovation · Performance

It's Green Thinking

TABLE OF CONTENTS

1. Before you Begin 3

What is Included 3
Unpacking Instructions 3
Text Conventions 3
Icons 3
Safety Notes 4

2. Introduction 5

3. Setup 6

AC Power 6
Power Linking 6
Mounting 7
Orientation 7
Rigging 7

4. Operation 8

Control Panel Operation 8
Configuration (DMX) 8
Starting Address 8
Configuration (Standalone Modes) 9
Sound Active Mode 9
Automatic Mode 9
Manual Mode 9
Master/Slave Mode 10
DMX Channel Assignments and Values 10

5. Technical Information 11

General Maintenance 11
General Troubleshooting 12
Returns Procedure 13
Claims 13
Contact Information 13
DMX Primer 14
Starting Address 14
Fixture Linking (Daisy Chain) 14
DMX Cabling 15
DIP Switch Reference Guide 16

6. Technical Specifications 17

1. BEFORE YOU BEGIN

What is Included

- 1 x Orb™
- 1 x Power Cord
- 1 x Warranty Card
- 1 x User Manual

Unpacking Instructions

Immediately upon receiving this product, carefully unpack it and check the container in which you received it. Make sure that you have received all the parts indicated above and that they are all in good condition. If the material inside the container (this product and any other accessory included with it) appears damaged from shipping, or if the container shows signs of mishandling, notify the shipper immediately. In addition, retain the container and all the packing material for inspection.

See the *Claims* section in the *"Technical Information"* chapter.

Text Conventions

Convention	Meaning
[10]	A DIP switch to be configured
<Menu>	A key to be pressed on the fixture's control panel
1~512	A range of values
50/60	A set of values of which only one can be chosen
Settings	A menu option not to be modified (for example, showing the operating mode/current status)
Menu > Settings	A sequence of menu options to be followed
ON	A value to be entered or selected

Icons

Icon	Meaning
	This paragraph contains critical installation, configuration, or operation information. Failure to comply with this information may render the fixture partially or completely inoperative, cause damage to the fixture, or cause harm to the user.
	This paragraph contains important installation or configuration information. Failure to comply with this information may prevent the fixture from functioning correctly.
	This paragraph reminds you of useful, although not critical, information.

Document Information

The information and specifications contained in this document are subject to change without notice. CHAUVET® assumes no responsibility or liability for any errors or omissions that may appear in this manual.

© Copyright 2011 CHAUVET®. All rights reserved

Printed in P.R.C.

Electronically published by CHAUVET® in the United States of America

Author	Editor	Manager	PD Manager
A. Chiappone	R. Jones	A. Reiss	F. Sellers

Product at a Glance

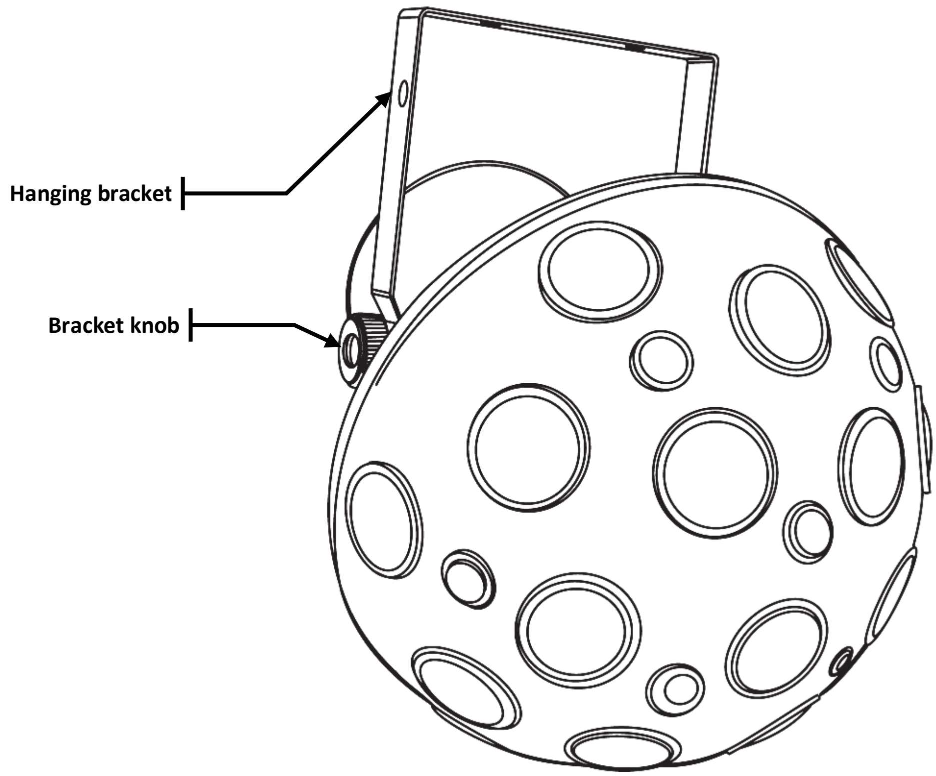
Use on Dimmer	⊘	Auto Programs	✓
Outdoor Use	⊘	Auto-ranging Power Supply	✓
Sound Activated	✓	Replaceable Fuse	✓
DMX	✓	User Serviceable	⊘
Master/Slave	✓	Duty Cycle	⊘

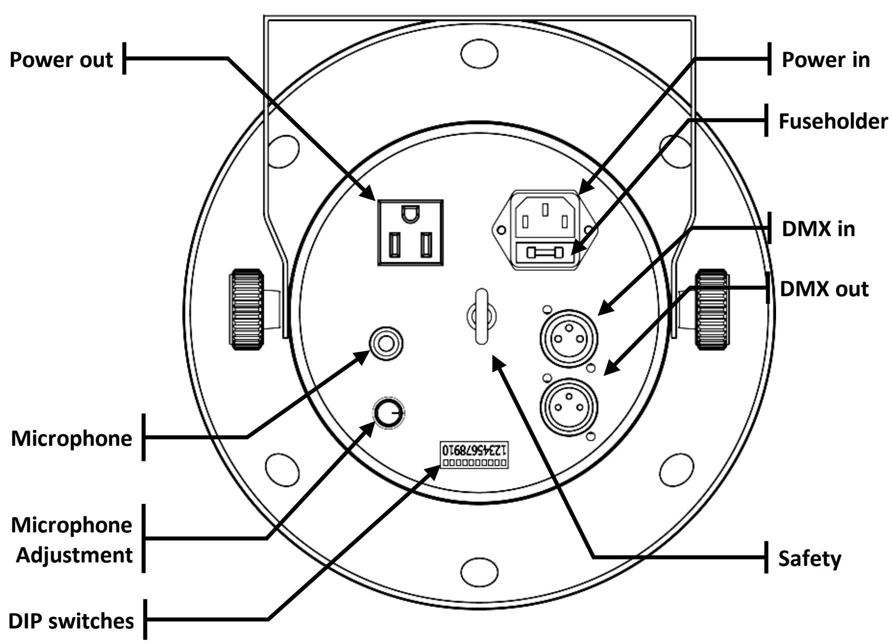
Safety Notes

Please read the following notes carefully because they include important safety information about the installation, usage, and maintenance of this product.

- Keep this User Manual for future consultation. If you sell this product to another user, be sure that they also receive this document.
- Always make sure that the voltage of the outlet to which you are connecting this product is within the range stated on the decal or rear panel of the fixture.
- This product is for indoor use only! To prevent risk of fire or shock, do not expose this fixture to rain or moisture.
- Make sure there are no flammable materials close to the unit while operating.
- Always install this product in a location with adequate ventilation, at least 20 in (50 cm) from adjacent surfaces.
- Be sure that no ventilation slots on the unit's housing are blocked.
- Always disconnect this product from the power source before cleaning it or replacing the fuse.
- Make sure to replace the fuse with another of the same type and rating.
- If mounting this product overhead, always secure it to a fastening device using a safety cable.
- The maximum ambient temperature (Ta) is 104° F (40° C). Do not operate this product at higher temperatures.
- In the event of a serious operating problem, stop using the unit immediately.
- Never try to repair this product. Repairs carried out by unskilled people can lead to damage or malfunction. Please contact the nearest authorized technical assistance center.
- Never connect this product to a dimmer pack.
- Make sure the power cord is not crimped or damaged.
- Never disconnect the power cord by pulling or tugging on the cord.
- Never carry a fixture from the power cord or any moving part. Always use the hanging/mounting bracket or the handles.
- Always avoid direct eye exposure to the light source when this fixture is on.

2. INTRODUCTION





3. SETUP

AC Power

This product has an auto-ranging power supply and it can work with an input voltage range of 100~240 VAC, 50/60 Hz.

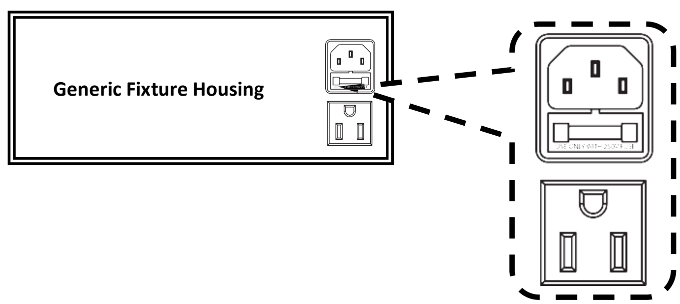
To determine the power requirements for a particular fixture, see the label affixed to the back plate of the fixture or refer to the fixture's specifications chart. A fixture's listed current rating indicates its average current draw under normal conditions.

Always connect this product to a protected circuit (circuit breaker or fuse), making sure that it has an appropriate electrical ground to avoid the risk of electrocution or fire.

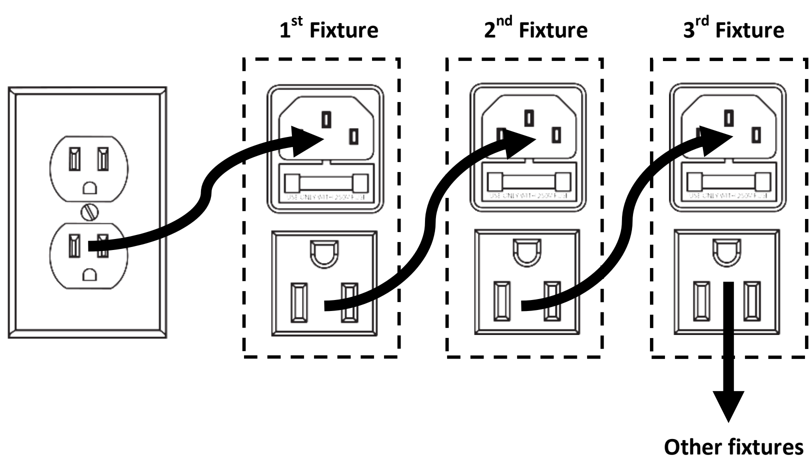
Never connect this product to a rheostat (variable resistor) or dimmer circuit, even if the rheostat or dimmer channel serves only as a 0 to 100% switch.

Power Linking

This fixture provides power linking via the Edison/IEC outlet located in the back of the unit. Please see the diagram below for further explanation.



Power Linking Diagram



You can power link up to 27 Orb™ units on 120 VAC or up to 51 Orb™ units on 230 VAC.

The power linking diagram shown above corresponds to the North American version of this product ONLY! If using this product in other markets, you must consult with the local CHAUVET® distributor as power linking connectors and requirements may differ in your country or region.

Mounting

Orientation

The Orb™ may be mounted in any position, provided there is adequate room for ventilation around it.

Rigging

Be sure that the structure onto which you are mounting this product can support its weight. Please see the "Technical Specifications" section of this manual for weight information.

Make sure to mount the fixture securely to a rigging point, whether an elevated platform or a truss.

When rigging this product onto a truss, you should use a mounting clamp of appropriate weight capacity. The bracket has a 13 mm hole, which is appropriate for this purpose.

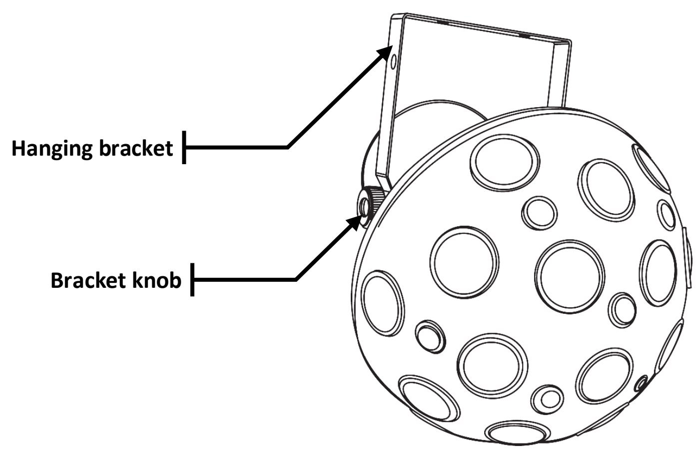
When mounting this product overhead, always use a safety cable.

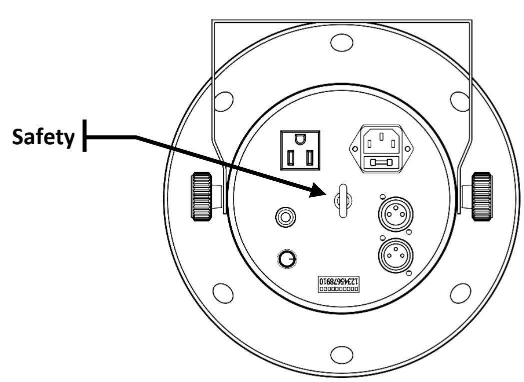
Before deciding on a location for this product, always make sure that it will be easy to access the unit for maintenance and programming purposes.

When power linking multiple fixtures, you must always consider the length of the power linking cable and mount the fixtures close enough for the cable to reach them.

The bracket knobs allow for directional adjustment when aiming the fixture to the desired angle. Only loosen or tighten the bracket knobs using your bare hands. Using tools could damage the knobs.

Mounting Diagram





4. OPERATION

Control Panel Operation

Configuration (DMX)

Set this product in DMX mode to control it with a DMX controller.

1) Connect this product to a suitable power outlet.
2) Turn this product on.
3) Connect a DMX cable from the DMX output of the DMX controller to the DMX input socket of this product.

Starting Address

When selecting a starting DMX address, always consider the number of DMX channels the selected DMX mode uses. If you choose a starting address that is too high, you could restrict the access to some of the fixture's channels.

The Orb™ uses one DMX channel in DMX mode, which defines the highest configurable address to 511.

If you are not familiar with the DMX protocol, you may refer to the "DMX Primer" section in the *"Technical Information"* chapter.

To select the starting address, do the following:

1) Set DIP [10] to the ON position..
2) Using DIP switches [1~9], select the starting address.

If you are not familiar with the procedure to configuring DIP switches, please refer to the DMX Primer section in the Technical Information chapter of this manual or visit http://www.chauvetlighting.com/chauvet-dip-switch-calculator/.

Configuration (Standalone Modes)

Set this product in one of the standalone modes to control it without a DMX controller.

1) Connect this product to a suitable power outlet.
2) Turn this product on.

Sound Active Mode

To enable the Sound Active mode, do the following:

1) Set DIP switch [9] to the ON position.
2) Turn the music on and adjust the microphone sensitivity knob until the fixture starts reacting to the beat of the music.

The fixture will only respond to the low frequencies of the music (bass and drums).

Automatic Mode

Never connect a fixture that is operating in any standalone mode, whether Static, Automatic, or Sound to a DMX string connected to a DMX controller. This is because fixtures in standalone mode may transmit DMX signals that could interfere with the DMX signals from the controller.

To enable the Automatic Mode, follow the instructions below:

1) Set DIP switch [8] to the ON position.

Manual Mode

To enable the Manual mode, do the following:

1) Set DIP switches [8~10] to the OFF position.
2) Use the following chart to combine DIP switches [1~7] to create a manual action.

DIP switch	Function
1	Red
2	Green
3	Blue
4	No function
5	Strobe (slow)
6	Strobe (fast)
7	Strobe & rotation (all colors)

The red, green, & blue DIP switches can be combined with the Strobe (slow/fast) DIP switches.

DIP switch [6] overrides DIP switch [5].

Master/Slave Mode

This mode allows a single Orb™ unit (the “master”) to control the actions of one or more Orb™ units (the “slaves”) without the need of a DMX controller. The master unit will be set to operate in either Automatic or Sound Active mode, while the slave units will be set to operate in Slave Mode. Once set and connected, the slave units will operate in unison with the master unit.

Configure the units as indicated below.

Slave units:

1) Set DIP switch [10] to the ON position.
2) Set the DMX address to “001”, as previously explained.
3) Connect the DMX input of the first slave unit to the DMX output of the master unit.
4) Connect the DMX input of the subsequent slave units to the DMX output of the previous slave unit.
5) Finish setting and connecting all the slave units.

Master unit:

1) Set the master unit to operate in either Automatic or Sound mode, as previously indicated.
2) Make the master unit the first unit in the DMX daisy chain.

- ***Configure all the slave units before connecting the master unit to the DMX daisy chain.***
- ***Never connect a DMX controller to a DMX string configured for Master/Slave operation because it may interfere with the signals from the master unit.***
- ***Do not connect more than 31 slave units to the master unit.***

DMX Channel Assignments and Values

Channel	Function	Value	Setting
1	**Operating mode**	000 ⇔ 089	No function
		090 ⇔ 175	Automatic mode
		176 ⇔ 255	Sound-active mode

5. TECHNICAL INFORMATION

General Maintenance

Dust build up reduces light output performance and can cause overheating. This can lead to reduction of the light source's life and/or mechanical wear. To maintain optimum performance and minimize wear, you should clean your lighting fixtures at least twice a month. However, be aware that usage and environmental conditions could be contributing factors to increase the cleaning frequency.

To clean this fixture, follow the instructions below:

- Unplug the fixture from power.
- Wait until the fixture is cold.
- Use a vacuum (or dry compressed air) and a soft brush to remove dust collected on the external surface/vents.
- Clean all external glass surfaces with a mild soap solution, ammonia-free glass cleaner, or isopropyl alcohol.
- Apply the solution directly to a soft, lint free cotton cloth or a lens cleaning tissue.
- Softly drag any dirt or grime to the outside of the external glass surface.
- Gently polish the external glass surfaces until they are free of haze and lint.

Always dry the external glass surfaces carefully after cleaning them.

General Troubleshooting

Symptom	Possible Cause	Possible Action
Circuit breaker or fuse keeps blowing	• Excessive load on the circuit	• Make sure that the total load does not exceed 80% of the breaker or fuse nominal current
	• Short circuit along the power lines	• Check the power lines and power cords
Product does not power up	• No energy on power outlet	• Check power outlet • Change to another outlet
	• Loose or damaged power cord	• Check the power cord
	• Blown fuse	• Replace blown fuse with a good one of the same type and rating
	• Internal problem	• Send product for repair
Fixture does not respond to DMX	• Wrong starting address on the fixture	• Set the correct starting address on the fixture • Use the right fader(s) on the controller
	• Wrong polarity setting on the DMX controller	• Change the signal polarity on the controller
	• Loose or damaged DMX cable	• Check the DMX cable before the faulty unit
	• Internal problem	• Send product for repair
Intermittent DMX Problems	• Signal cables are not DMX compatible	• Replace non DMX cables with true DMX cables
	• Interference with AC or radio signals	• Keep DMX cables away from AC wires or radio equipment
	• DMX cable too long	• Install an optically coupled DMX amplifier right before the fixture with intermittent problems
	• Too many fixtures connected	• Install an optically coupled DMX amplifier after unit #32
	• Terminator not connected	• Install a terminator, as indicated in the “DMX Primer” section.

If you still experience problems after trying the above solutions, contact CHAUVET® Technical Support.

Returns Procedure

The user must send the merchandise prepaid, in the original box, and with its original packing and accessories. CHAUVET® will not issue call tags.

Call CHAUVET® and request a Return Merchandise Authorization (RMA) number before shipping the fixture. Be prepared to provide the model number, serial number, and a brief description of the cause for the return.

The user must clearly label the package with a Return Merchandise Authorization (RMA) number. CHAUVET® will refuse any product returned without an RMA number.

DO NOT write the RMA number directly on the box. Instead, write it on a properly affixed label.

Once you have received the RMA number, please include the following information on a piece of paper inside the box:

- Your name
- Your address
- Your phone number
- The RMA number
- A brief description of the problem

Be sure to pack the fixture properly. Any shipping damage resulting from inadequate packaging will be the customer's responsibility. As a suggestion, proper UPS packing or double-boxing is always a safe method to use.

CHAUVET® reserves the right to use its own discretion to repair or replace returned product(s).

Claims

The carrier is responsible for any damage incurred during shipping to this product or any part that shipped with it. Therefore, if the received merchandise appears to have damages caused during shipping, the customer must submit the damage report and any related claims with the carrier, not CHAUVET®. The customer must submit the report upon reception of the damaged merchandise. Failure to do so in a timely manner may invalidate the customer's claim with the carrier.

For other issues such as missing components or parts, damage not related to shipping, or concealed damage, the customer must make claims to CHAUVET® within seven (7) days of receiving the merchandise.

Contact Information

World Headquarters

CHAUVET®

General Information

Address: 5200 NW 108th Avenue, Sunrise, FL 33351
Voice: (954) 929-1115
Fax: (954) 929-5560
Toll free: (800) 762-1084

Technical Support

Voice: (954) 929-1115 (Press **4**)
Fax: (954) 756-8015
Email: tech@chauvetlighting.com

World Wide Web

www.chauvetlighting.com

United Kingdom & Ireland

CHAUVET® Europe Ltd.

General Information

Address: Unit 1C, Brookhill Road Industrial Estate, Pinxton, Nottingham, UK, NG16 6NT
Voice: +44 (0)1773 511115
Fax: +44 (0)1773 511110

Technical Support

Email: uktech@chauvetlighting.com

World Wide Web

www.chauvetlighting.co.uk

DMX Primer

The USITT DMX512-A data transmission protocol (DMX, from now on) is based on the EIA-485 standard and it has 512 channels (001 to 512). This system requires a controller (DMX controller), one or more DMX compatible fixtures, and a DMX circuit (also known as "DMX universe") to link the fixtures to the controller.

Depending on their complexity and features, DMX compatible fixtures may require from one to more than 30 DMX channels to operate. Some DMX fixtures have multiple operation modes (also known as "personalities"), each with its own number of channels and controllable parameters.

Starting Address

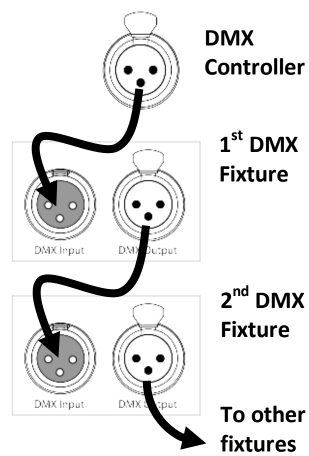
In the DMX system, the controller sends DMX data to each fixture based on the fixture's starting address. The starting address is the number of the DMX channel (001 to 512) assigned to the fixture's first control channel (Channel 1). When assigning starting addresses to multiple fixtures, it is critical to ensure that no starting address is already in use by another fixture to prevent channels from overlapping. Otherwise, the affected fixtures may operate erratically.

For instance, a user has two DMX compatible fixtures. Fixture "A" has four channels and fixture "B" has six channels. If the user configures the starting address of fixture "A" to "001", channels 001 through 004 on the DMX controller will control fixture "A". This means that the user should assign the starting address of fixture "B" to "005" or higher. For a starting address of "005", the DMX controller would use channels 005 to 010 to control fixture "B".

It is possible to control multiple fixtures of the same type by assigning each one of them the same starting address. In this case, all the fixtures would respond in unison (synchronized) to the signals from the DMX controller.

Fixture Linking (Daisy Chain)

DMX compatible fixtures receive the control signals from the DMX controller through the DMX cables. Each fixture has a DMX In and a DMX Out connector. The figure to the right illustrates how the fixtures link to each other using multiple segments of DMX cable in a sequential format called "daisy chain".



The order in which the fixtures connect to the DMX controller is irrelevant because all fixtures receive the same DMX signals and they only respond to them based on their individual starting addresses. However, it is important to notice that the connections between fixtures should always be as short and direct as possible.

To ensure the integrity of the DMX signal, follow the recommendations of the EIA-485 standard:

- The maximum recommended cable length is 500 m (1,640 feet).
- The maximum recommended number of fixtures on the same daisy chain is 32.

Connecting more than 32 fixtures on one daisy chain without the use of a DMX optically-isolated splitter may result in deterioration of the digital DMX signal.

DMX Cabling

The DMX protocol requires using special data cables to accommodate for the high speed digital signals it uses. Despite their apparent similarities, data cables are electrically different from standard microphone cables because they can carry high frequency digital signals and have better protection against electromagnetic interference. You can purchase CHAUVET® certified DMX cables directly from a dealer/distributor or make your own DMX cable.

If you choose to make your own DMX cable, you must use a data-grade cable such as the Belden 9841, which has the following electrical characteristics:

Type:	shielded, 2-conductor twisted pair
Maximum capacitance between conductors:	30 pF/ft
Maximum capacitance between conductor and shield:	55 pF/ft
Maximum resistance:	20 ohms/1000 ft
Nominal impedance:	100~140 ohms

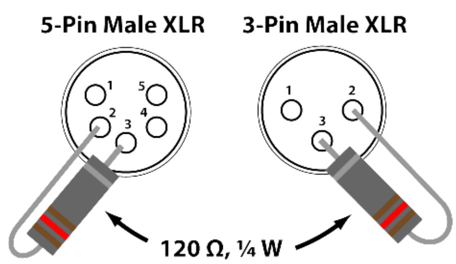
DMX Connectors

Each DMX cable must have a male XLR connector on one end and a female XLR connector on the other end. The DMX protocol indicates that the XLR connectors must have five pins. However, most lighting fixtures use the 3-pin XLR connector. The pin assignment of the 3-pin and 5-pin XLR connectors in a DMX cable is as follows:

Male Plug			Female Plug		
Signal	**3-Pin**	**5-Pin**	**5-Pin**	**3-Pin**	**Signal**
Common	1	1	1	1	Common
Data -	2	2	2	2	Data -
Data +	3	3	3	3	Data +
Not used		4	4		Not used
Not used		5	5		Not used

You can use the above table to create a 3-pin/3-pin cable, a 5-pin/5-pin cable, or a 3-pin to 5-pin adapter.

The DMX daisy chain uses a terminator to reduce signal transmission problems, especially with long cables. The terminator consists of either a 3-pin or 5-pin XLR male plug with a 120 Ω, ¼ W resistor connected to the wire side of pins 2 and 3, as shown below.



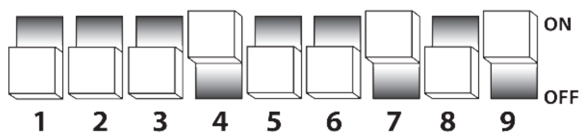
The terminator plug connects to the DMX Out socket of the last DMX fixture in the daisy chain.

Do not allow the common wire of the DMX cable to touch the fixture's chassis ground. This could cause a ground loop, which may affect your fixtures' performance. Test all DMX cables with an ohmmeter to verify the correct polarity of the wires, and to make sure that they are not touching the shield or each other.

DIP Switch Reference Guide

You can use the table below to set your fixture's DIP switches. Imagine that you want to find the DIP switch settings for DMX address **328**:

1) Find **328** among the addresses from the table and point at it with your finger.
2) Move your finger to the left and you will find the settings for DIP Switches **1** to **5**. DIP Switches **1**, **2**, **3**, and **5** are Off (0), while DIP Switch **4** is On (1).
3) Go back and point at the **328** address.
4) Move your finger upward and you will find the settings for DIP Switches **6** to **9**. DIP Switches **6** and **8** are Off (0), while DIP Switches **7** and **9** are On (1).
5) See below how the DIP Switches will look after configuring them.



DIP Switches 0 = Off 1=Off				#9	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				#8	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				#7	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				#6	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
#1	#2	#3	#4	#5	**DMX Address**															
0	0	0	0	0	-----	32	64	96	128	160	192	224	256	288	320	352	384	416	448	480
1	0	0	0	0	1	33	65	97	129	161	193	225	257	289	321	353	385	417	449	481
0	1	0	0	0	2	34	66	98	130	162	194	226	258	290	322	354	386	418	450	482
1	1	0	0	0	3	35	67	99	131	163	195	227	259	291	323	355	387	419	451	483
0	0	1	0	0	4	36	68	100	132	164	196	228	260	292	324	356	388	420	452	484
1	0	1	0	0	5	37	69	101	133	165	197	229	261	293	325	357	389	421	453	485
0	1	1	0	0	6	38	70	102	134	166	198	230	262	294	326	358	390	422	454	486
1	1	1	0	0	7	39	71	103	135	167	199	231	263	295	327	359	391	423	455	487
0	0	0	1	0	8	40	72	104	136	168	200	232	264	296	328	360	392	424	456	488
1	0	0	1	0	9	41	73	105	137	169	201	233	265	297	329	361	393	425	457	489
0	1	0	1	0	10	42	74	106	138	170	202	234	266	298	330	362	394	426	458	490
1	1	0	1	0	11	43	75	107	139	171	203	235	267	299	331	363	395	427	459	491
0	0	1	1	0	12	44	76	108	140	172	204	236	268	300	332	364	396	428	460	492
1	0	1	1	0	13	45	77	109	141	173	205	237	269	301	333	365	397	429	461	493
0	1	1	1	0	14	46	78	110	142	174	206	238	270	302	334	366	398	430	462	494
1	1	1	1	0	15	47	79	111	143	175	207	239	271	303	335	367	399	431	463	495
0	0	0	0	1	16	48	80	112	144	176	208	240	272	304	336	368	400	432	464	496
1	0	0	0	1	17	49	81	113	145	177	209	241	273	305	337	369	401	433	465	497
0	1	0	0	1	18	50	82	114	146	178	210	242	274	306	338	370	402	434	466	498
1	1	0	0	1	19	51	83	115	147	179	211	243	275	307	339	371	403	435	467	499
0	0	1	0	1	20	52	84	116	148	180	212	244	276	308	340	372	404	436	468	500
1	0	1	0	1	21	53	85	117	149	181	213	245	277	309	341	373	405	437	469	501
0	1	1	0	1	22	54	86	118	150	182	214	246	278	310	342	374	406	438	470	502
1	1	1	0	1	23	55	87	119	151	183	215	247	279	311	343	375	407	439	471	503
0	0	0	1	1	24	56	88	120	152	184	216	248	280	312	344	376	408	440	472	504
1	0	0	1	1	25	57	89	121	153	185	217	249	281	313	345	377	409	441	473	505
0	1	0	1	1	26	58	90	122	154	186	218	250	282	314	346	378	410	442	474	506
1	1	0	1	1	27	59	91	123	155	187	219	251	283	315	347	379	411	443	475	507
0	0	1	1	1	28	60	92	124	156	188	220	252	284	316	348	380	412	444	476	508
1	0	1	1	1	29	61	93	125	157	189	221	253	285	317	349	381	413	445	477	509
0	1	1	1	1	30	62	94	126	158	190	222	254	286	318	350	382	414	446	478	510
1	1	1	1	1	31	63	95	127	159	191	223	255	287	319	351	383	415	447	479	511

6. Technical Specifications

Dimensions and Weight

Length	Width	Height	Weight
17.7 in (450 mm)	12 in (305 mm)	12 in (305 mm)	6.7 lbs (3.1 kg)

Note: Dimensions in inches rounded to the nearest decimal digit.

Power

Power Supply Type	Range	Voltage Selection
Switching (internal)	100~240 V, 50/60 Hz	Auto-ranging

Parameter	120 V, 60 Hz	230 V, 50 Hz
Consumption	34 W (0.29 A)	28 W (0.16 A)

Power I/O	Input	Output
Connectors	IEC	Edison/IEC
Cord plug	Edison	N/A

Light Source

Type	Power	Lifespan
LED	4.9 W; 954 mA (total)	50,000 hours

Color	Power
Red	1.3 W
Green	2 W
Blue	1.3 W

Photo Optic

Parameter	Value
Coverage angle	127º

Thermal

Maximum External Temp.	Cooling System
104° F (40° C)	Convection

DMX

I/O Connectors	Connector Type	Channel Range
3-pin XLR	Sockets	1

Ordering

Item Name	Item Number	Item Code
Orb™	ORB	07050315